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| MARGER JOHNSON & MCCOLLOM, P.C. | | | CHANG, EDITH M | |
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2637

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/186,977

Applicant(s)

ARMISTEAD, R. ASHBY

Examiner

Edith M. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 14-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments with respect to claims 1-2, 4-7 and 12-35 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings were received on February 7, 2005. These drawings are accepted.

Claim Objections

3. Claims 1-11, 14-24 and 28-39 are objected to because of the following informalities:

Claim 1, line 16: "loss of connection" is suggested changing to "loss of said first data connection".

Claims 3 & 6 line 2, Claim 5 lines 2 & 3: "said interface" is suggested changing to "the data communication interface".

Claim 14, line 14: "said first N" is suggested changing to "the first N"; line 17: "loss of connection" is suggested changing to "loss of said first data connection".

Claim 19, line 16: "the indicated data-handling resource" is suggested changing to "the one of said N data-handling resources"; line 18: "connection" is suggested changing to "said first data connection".

Claim 21, line 2: "one or more" is suggested changing to "said one or more".

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Claim 22, line 1: "said subsystem" is suggested changing to "said multiple-modem subsystem"; line 9: "the modem resources" is suggested changing to "the multiple modem resources"; line 10: "other modem" is suggested changing to "any one of the multiple modem"; line 13: "said modem" is suggested changing to "the multiple modem"; line 14: "said modem connection" is suggested changing to "said active modem connection"; line 15: "the modem" is suggested changing to "the multiple modem".

Claims 23 & 24, line 1: "said modem" is suggested changing to "the multiple modem".

Claim 28, line 5: "said data-handling" is suggested changing to "said active data-handling"; line 6: "a data-handling" is suggested changing to "said active data-handling"; line 10: "of a data connection" is suggested changing to "of the data connection"; line 12: "a data connection from an" is suggested changing to "the data connection from said"; lines 13 & 15: "said data connection" is suggested changing to "the data connection".

Claim 30, line 3: "said multiple data connections" is suggested changing to "multiple data connections".

Claim 31, line 3: "multiple data connections" is suggested changing to "multiple simultaneous data connections", "multiple data handling" is suggested changing to "the multiple data handling".

Claim 35, line 2: "the connection" is suggested changing to "the data connections".

Claim 36, line 1: "wherein" should be "wherein the internal state information stored in"; line 5: "frames" is suggested changing to "received frames".

Claim 37, line 1: "a frame included" should be "a frame stored".

Claim 38, line 2: "the second" is suggested changing to "said second"; lines 2-3: "the first" is suggested changing to "said first".

Claim 39, line 2: "the second" is suggested changing to "said second"; line 3: "the first" is suggested changing to "said first".

Claims 2, 4, 7-11, 15-18, 20, 29 and 32-34 are directly or indirectly dependent on the objected claims 1, 14, 19, 22 and 28.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7-11, 14-18 and 28-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites said first digital signal processor (DSP) of said first data-handling resource residing on a first circuit card and said second DSP of said second data-handling resource residing on a second circuit card as disclosed in FIG.4 that said first data-handling resource residing on a first circuit card and said second data-handling resource residing on a second circuit card can not *connected* to said resource internal state memory residing on a third circuit card, wherein the internal state information is savable and retrievable over a bus.

Claim 8 recites said first data-handling resource comprising a first circuit card comprising multiple DSPs, and said second data-handling resource comprising a second circuit card

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comprising multiple DSPs that said first data-handling resource and said second data-handling resource can not *connected* to said resource internal state memory, wherein the internal state information is savable and retrievable over a bus.

Claim 9, line 2: "internal state information" does not clearly indicate that the "internal state information" is the same the internal state information cited in claim 1 or different internal state information savable and retrievable over a bus.

Claim 10 recites that said second data-handling resource can receive a simultaneous transfer of all connections received by said first data-handling resource to said second data-handling resource. It is not understood, indefinite, and not clearly indicate where and how said first and second data-handling resources save and retrieve the internal state information from internal state memories comprising said resource internal state memory recited in claim 1 and said card internal state memories recited in claim 9 that said second data-handling resource can receive the simultaneous transfer of all connections received by said first data-handling resource, wherein the internal state information is savable and retrievable over a bus.

Claim 11 recites that said second data-handling resource can receive a transfer of selected connections received by said first data-handling resource to said second data-handling resource. It is not understood and not clearly indicate where and how said first and second data-handling resources save and retrieve the internal state information from internal state memories comprising said resource intern state memory recited in claim 1 and said card internal state memories recited in claim 9 that said second data-handling resource can receive a transfer of selected connections received by said first data-handling resource, wherein the internal state information is savable and retrievable over a bus.

Claim 14, line 15: "the indicated data-handling resource" lacks antecedent basis, wherein the one or more conditions indicate that a first data connection should no longer be directed to *any one* of said first N of said data-handling resource.

Claim 28, line 11: "said first data-handling resource" lacks antecedent basis.

Claim 36, line 6: "it" in "it has been transmitted" does not clearly indicate what is the "it", what has been transmitted; line 7: "the frame" lacks antecedent basis.

Claims 15-18, 29-35 and 37 are dependent on the rejected claims 14, 28 and 36.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1-2, 4-7, 14-21 and 25-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232).

Regarding claims 1, 28 & 38-39, in FIG.4, Bellenger et al. discloses a multiple-modem system/a data communication interface and the method, comprising: a data bus element 410 connecting multiple DSPs (or data-handling resources: elements 414 on cards 400A, 402, 404, 406 and 408, wherein each 414 comprises 24 data handling resources to handle up to 24 subscriber lines from 418A-X, column 12 lines 48-54) handling the data from the connections of the subscriber lines, wherein the DSP 414 (one resource handling a subscriber line in the primary

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DSP of one line card) is *the first data-handling resource* and the DSP 424 (the backup/local resource in the DSP 424 of the processing card 402) is *the second data-handling resource, the controller 404 (as the data-handling resource controller)* directing (*transferring*) the data connections/communications between DSPs, when the first DSP 414 is idle (no communications), not appropriate to use or not turned to the normal (comprising any condition/defect causing the terminate of the normal operation that data should not direct to it, column 6 lines 15-20), the data from the connection is directed to the second/backup DSP 424 (FIG. 13A-13B, when the primary DSP session/connection is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss of the data connection. The DSPs (elements 414 & 424), the data-handling resources, connected to *the memory* (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60 wherein the info in the table/memory contains the info for all DSP resources column 13 lines 30-35) such as the data transformation information, session logs, etc. (column 13 lines 40-55, column 16 lines 35-40, wherein the record of the subscriber table containing the data transformation) which are dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session (*periodically*, as in column 16 lines 40-42 frequently/time to time, and as stated in column 19 lines 22-25 in a round robin manner).

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-

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known inter card/resource connection in FIG. 1, wherein a card with multiple DSPs (data handling resources). In FIG. 1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG. 3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig_1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to

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have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al.'s memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not losing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 2**, Bellenger et al. discloses the first data-handling resource/modem comprising a first digital signal processor (424 FIG.4), and the second data-handling resource comprises a second digital signal processor (414 FIG.4).

Regarding **claim 4**, Bellenger et al. discloses the data-handling resource controller and the resource internal state memory also reside on the common circuit card (404 FIG.4).

Regarding **claim 5**, Bellenger et al. discloses the first digital signal processor/modem resides on a first circuit card (402 FIG.4) within the interface, and wherein the second digital signal processor/modem resides on a second circuit card (400A FIG.4) within the interface and sharing a common bus (410 FIG.4) with the first circuit card.

Regarding **claims 6 & 7**, Bellenger et al. discloses the data-handling resource controller resides on a third circuit card within the interface (404 FIG.4), and the resource internal state memory (432 FIG.4) also resides on the third circuit card.

Regarding **claims 14-17**, Bellenger et al. discloses a multiple-modem system

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and a data communication interface comprising: a data bus element 410 connecting multiple N+1 DSPs (N elements 414 on cards 400A, and one is the 424 of local DSP performing the modem function) handling the data from the connections of the subscriber lines, wherein the DSPs 414 (the primary) are the first N data-handling resources and the DSP 424 (the backup/local) is the N+1 the data-handling resource, the controller 404 directing the data connections between DSPs, when any one of the first/primary DSPs 414 is idle, not appropriate to use or not turned to the normal (comprising any defect causing the terminate of the normal operation that data should not direct to it), the data from the connection is directed to the N+1th backup DSP 424 (FIG. 13A-13B, when the primary DSP is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss the connection. The DSPs (elements 414 & 424), the data-handling resources, connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55) dynamically during the connection and session.

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG. 1, wherein a card with multiple DSPs (data handling resources). In FIG. 1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG. 3, Sinibaldi et al. further teaches the separate bus

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54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig_1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al.'s memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not

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loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 18**, in FIG.5, Bellenger et al. discloses the voice codec (elements 418 & 502) to sample the signal from the subscriber lines 1-24.

Regarding **claim 19**, Bellenger et al. discloses a multiple-modem system and a data communication interface comprising: a data bus element 410 connecting multiple N DSPs (or data-handling resources: elements 414 on cards 400A & the 424 of local DSP in 104A of FIG.1A, wherein each 414 comprises 24 data handling resources to handle up to 24 subscriber lines from 418A-X, column 12 lines 48-54, and the remote DSPs at 106 FIG.1A stated in column 12 lines 60-65) handling the data from the connections of the subscriber lines, the controller 404 directing the data connections between DSPs, when any one of the DSPs in the line card is idle, not appropriate to use or not turned to the normal (comprising any condition/defect causing the terminate of the normal operation that data should not direct to it), the data from the connection is directed to the another DSP, the backup DSP (FIG.13A-13B, when the primary DSP in the line card is idle tested at 1210, the data is directed to the backup DSP at 1218) without loss the data connection. The DSPs, the data-handling resources, connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55)

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dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session.

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG. 1, wherein a card with multiple DSPs (data handling resources). In FIG. 1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG. 3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem

system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig_1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al.'s memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 20**, in FIG.13A & FIG.13B, Bellenger et al. discloses the controller drops the connection at 1212B when all resources do not take the connection.

Regarding **claim 21**, in FIG.13A & FIG.13B, Bellenger et al. discloses directing the data from the connection to any idle resource having capacity to handle the data at 1326 FIG.13A by responding session/connection idle indication.

Regarding **claims 25 & 27**, in FIG.4/FIG.5, Bellenger et al. discloses the modem and its method, the modem resource DSP 402/414 comprising the memory element 422/522 for storing

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internal state configuration of the modem (column 13 lines 54-57 wherein the modem parameters are stored), the element 416 communicates the information stored in the element 422/522 to other device or receiving pre-existing information from other modem DSP via the bus 410, wherein the information (column 13 lines 1-60) containing the data transformation information, session logs, etc. (column 13 lines 40-55) dynamically/continually brought up to date. Hence Bellenger et al. discloses a modem comprising an internal state configuration (in element 422/522) and an external state-saving/loading subsystem (elements 416) as cited in the claim.

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines of a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP in the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem-

(column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig_1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al.'s memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not losing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 26**, in FIG. 5, Bellenger et al. discloses an external state-saving/loading subsystem (element 416) by loading the pre-existing internal state configuration from other modem to pre-configure the modem for a pre-existing data connection.

Regarding **claim 29**, in FIG.4, Bellenger et al. discloses the DSP 424 (the backup/local) comprising a redundant resource.

Regarding **claims 30 & 31**, in FIG.4, Bellenger et al. discloses the DSP 414 receiving multiple simultaneous data connections from lines 1-14, and the information of the data connections stored in the memory is available to the local second (the backup) DSP or transferring the remote backup DSPs at 106 or 104B in FIG.1A based on the algorithm set in FIG.13A & FIG.13B where the resources having excess capacity processing the connections.

Regarding **claim 32**, Bellenger et al. discloses changing the internal state information depending on the information loaded in (column 13 lines 25-30).

Regarding **claims 33-35**, Bellenger et al. does not specify the frame acknowledgement, however in FIG.7 and FIG.8, Biba et al. teaches the data/packet stored in the multiple-modem system/method in RAM 240 and column 12 lines 1-5, wherein the data/packet containing the frame acknowledgement ACK in FIG.8B and sending the acknowledgement till storage is full that is all received data (or the data transmitted to the modem) saved (column 13 lines 30-50). As Bellenger et al.'s multiple-modem method handling the data/packet, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to store and send the acknowledgement taught by Biba et al. to control the flow for the purpose of not losing data and increase the capacity.

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8. Claims 3 & 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6,263,016 B1) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232) as applied to claim 1 above, and further in view of in view of Green et al. (US 5,949,762).

Regarding **claim 3**, further Green et al. teaches the first and second digital signal processors reside on a common circuit card within the interface (68 FIG.2 & 3, column 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). As Bellenger et al.'s multiple modems system, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the first and second digital signal processors residing on a common circuit card taught by Green et al. for the purpose to process multiple calls/connections simultaneously for DSPs allocated in one card and save the cost (column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 8**, Bellenger et al. discloses the first data-handling resource and the second data-handling resources (the DSPs of line cards FIG.4, the DSPs of 402 and 602 FIG.4 & 6, column 36 lines 10-14) but does not specify the multiple digital signal processors in one card. However Green et al. teaches the multiple digital signal processors reside on a common circuit card (68 FIG.2 & 3, column 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). As Bellenger et al.'s method passing the connections from one resource (the primary DSP) to other resources simultaneously (the backup DSP resources column 12 lines 50-65 where the primary DSP is bypassed), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have Bellenger et al.'s first and second data-handling resources replaced by the multiple-modem board taught by Green et al. for the purpose to provide a

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modem or multiple modems for processing multiple calls simultaneously (Abstract, column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 9**, Bellenger discloses each circuit card comprise a card internal state memory saving the information from the DSP of the card (420/430 FIG.4).

Regarding **claims 10 & 11**, the modified Bellenger's interface with Green et al.'s teaching the first data-handling resource receives multiple simultaneous data connections and the second data-handling resource receives the selected connection by the conditions.

9. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6,263,016 B1) in view of Biba et al. (US 4,521,891), Sinibaldi et al. (US 5,771,232) and Osler et al. (US 6,038,222).

Regarding **claim 22**, in FIG.4, Bellenger et al. discloses a multiple-modem subsystem, comprising: a data bus element 410 connecting multiple modems (cards 400A with DSPs 414) handling the data from the connections of the subscriber lines, wherein the primary modem 400 is the first data-handling resource and the backup/local modem 402 is the second data-handling resource, the controller 404 directing the data connections between modems, when the first modem 400A with DSP 414 is idle, not appropriate to use or not turned to the normal (data should not direct to it, column 6 lines 15-20), the data from the connection is directed to the second/backup modem 402 (FIG.13A-13B, when the primary DSP session/connection is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss the connection. The modems (elements 400A & 402) are connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines

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1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55, column 16 lines 35-40, wherein the activity table containing link control information, the record of the subscriber table containing the data transformation) which are dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session, however it is well-known that the failure or removal of the first data-handling resource causing the link failure in turns the session does not turn to normal use (in idle) as taught by Osler et al.

Osler et al. teaches in FIG.2, column 3 lines 20-25 and column 4 lines 5-15 that the link failure or terminate link idles the modem session. Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Osler et al.'s teaching in Bellenger's condition comprising the resource failure or removal that causes the session idle by reset the modem software or terminate link to simplify the command set for the purpose of reduce the DSP circuitry complexity (column 2 lines 3-5).

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections

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(column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines of a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP in the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig_1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al.'s memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not

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loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claims 23 & 24**, Bellenger et al. discloses each data-handling resource/modem comprising a circuit card (element 400A, 402-408 FIG.4) with digital signal processor (elements 414-454 FIG.4).

Allowable Subject Matter

10. Claims 36 and 37 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a data communication interface as a whole, the combination of elements and features, which includes a resource internal state memory storing internal state information of existing data connections developed by a first data handling resources connected to a data bus over the course of connections, saved via a bus by the first data handling resource and retrieved via the bus by a second data handling resource connected to the data bus, for the second data handling resource taking over data directed to a data connection of the first data handling resource without loss of the data connection, wherein the internal state information comprising a

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list of received frame acknowledgements, a list of not received frame acknowledgements, records representing received frames, each record comprises the frame number, the last transmit time, and the data of the frame.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

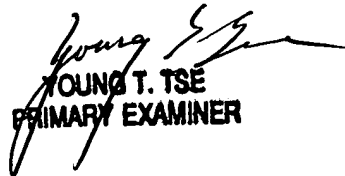
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
June 8, 2005


YOUNG T. TSE
PRIMARY EXAMINER